

Winter 2004



RPM News

▲ Remedial Project Manager News ▲

"COMMUNICATING NAVY INSTALLATION RESTORATION PROGRAM NEWS AND INFORMATION AMONG ALL PARTICIPANTS"

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Get a head start on your article for upcoming issues of RPM News.

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Spring 2005
Summer 2005
Fall 2005

4 February
6 May
5 August

RPM NEWS

Remedial Project Manager News

Published By
NFESC



Using Appropriated Funds

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Coastal America Honors Navy Activities With 2004 Spirit Awards

PWC Norfolk and LANTDIV

The former Public Works Center (PWC) Norfolk and Naval Facilities Engineering Command (NAVFAC), Atlantic Division (LANTDIV) were among several Navy activities honored with a Spirit Award for 2004 from Coastal America, a partnership of Federal agencies, state and local Governments, and private organizations working together to protect, preserve, and restore our nation's coasts.

"These projects were accomplished by extraordinary people who invested their time and effort to make them successful," said Cherryl Barnett, Navy Region Mid-Atlantic Environmental Coordinator.

The award, presented 22 Oct in Portsmouth, Virginia, recognized two projects, the Navy/Atlantic Wood Industries Joint Approach Response Action (JARA) and the Paradise Creek Restoration project. Both are on property at the Norfolk Naval Shipyard (NNSY) in Portsmouth and were managed jointly by NNSY, NAVFAC and Navy Region Mid-Atlantic.



Team members for the AWI site poses with their award. Team members include the Navy EPA, Virginia Dept. of Environmental Quality, AWI, The Elizabeth River Project and the Virginia Institute of Marine Science. DASN Schregardus is on the left and Rear Adm. Stephen Turcotte, Commander Navy Region Mid-Atlantic is on the right.

"These people took extra steps to work with the community and protect the Chesapeake Bay," said Donald Schregardus, Deputy Assistant Secretary of the Navy for the Environment. "These projects are exceptional models of teamwork and partnership with local and regional benefits and serve as a positive model for others."

The JARA involved "cross boundary contamination" between a Navy Installation Restoration Program site and an adjacent private property owned by Atlantic Wood Industries (AWI). After many years of contention, the unique legal agreements and partnerships required to expedite restoration of this site were the driving force behind development and implementation of the JARA concept. A shared vision for effective and timely restoration of the site allowed the U.S.

Environmental Protection Agency (U.S. EPA), Navy and AWI to establish and maintain the partnership needed to develop these

groundbreaking agreements, the first of their kind, to jointly address the contamination at both sites and to integrate regional Chesapeake Bay program initiatives into the final remedy for site restoration.

"Removing the logjam at the Atlantic Wood site was one of the most significant events in restoring the Elizabeth River in the past 20 years," said Marjorie Mayfield Jackson, Executive Director of the Elizabeth River Project.

The New Gosport landfill site located on the Paradise Creek sub-watershed is a tributary of the Elizabeth River, one of the most polluted watersheds in the entire Chesapeake Bay. The landfill contained over 55,000 tons of abrasive blast material (ABM), contaminated soils, and lead-tainted paint chips from ship blasting operations from 1969 through 1970. The team's original plan was to completely excavate all of the ABM and dispose of the material as hazardous waste, but the projected costs of this method far exceeded the total funding allocated for the project.

To prevent complete scrapping of the project and to avoid continued cleanup delays, the *Navy Environmental Restoration Team/Paradise Creek* petitioned all stakeholders to explore creative and innovative alternatives for the site. This resulted in the successful, cost-effective integration of regional restoration goals into an established regulatory program by pushing the traditional envelope of multi-agency partnerships.

The Navy Environmental Restoration Team/Paradise Creek went beyond regulatory compliance at this project site and incorporated design changes that support the local watershed planning goals of the Elizabeth River Project, the Virginia Institute of Marine Science, the regional Chesapeake 2000 initiatives established by the EPA, The Chesapeake Bay Restoration Act and the Department of Defense (DOD) commitments to the Federal Agencies' Chesapeake Ecosystem Unified Plan.

"These groups created new concepts and new ways of thinking in both the public and private sectors," said John Wright, Co-Chair, Coastal America Mid-Atlantic Region.

"We will build on what the Navy has started restoring, Paradise Creek," Jackson added.



Team members for the Gosport Landfill at Paradise Creek pose with their award. Team members include the Navy, EPA, Virginia Dept. of Environmental Quality, The Elizabeth River Project and the Virginia Institute of Marine Science. DASN Schregardus is on the left and Rear Adm. Stephen Turcotte, Commander Navy Region mid-Atlantic is on the right.

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Pilot-Scale Comparison of Biostimulation and Bioaugmentation

Naval Station Treasure Island

The Navy has identified 33 sites for further investigation and potential cleanup as part of the Installation Restoration (IR) Program for the former Naval Station (NS) Treasure Island and Yerba Buena Island near San Francisco, California. Due to the large number of IR sites, the Navy is actively testing innovative approaches for environmental cleanup including bioremediation technologies to improve cleanup performance and cost effectiveness.

From April 2003 to March 2004, a pilot-scale study for the bioremediation of perchloroethylene (PCE) was conducted at Building 99 at NS Treasure Island. The study was performed by the Navy in collaboration with the Base Realignment and Closure Team (BCT), which is comprised of representatives from the Department of the Navy (DON), the United States Environmental Protection Agency (US EPA), the California EPA Department of Toxic Substances Control, and the California EPA Regional Water Quality Control Board. The project background, demonstration results, and future work are discussed below.

Project Background

Between 1942 and 1977, Building 99 was used as the Base laundry facility. The contaminants of concern are PCE, a solvent used in dry cleaning, and its degradation products. These solvents, part of a chemical class called chlorinated ethenes, have been detected at high concentrations in groundwater beneath Building 99. Because the groundwater at Treasure Island is within a confined aquifer, the contaminants do not present a risk to human health or the environment at Treasure Island. The drinking water for Treasure Island is supplied by the City of San Francisco, and meets all regulatory drinking water standards.

The pilot test was designed to evaluate the effectiveness of in situ anaerobic bioremediation at degrading PCE into nontoxic products such as ethene, ethane, methane, carbon dioxide, and water (a process called chlororespiration). Anaerobic bioremediation is accomplished by distributing a substrate throughout a contaminated portion of the aquifer that can ferment to stimulate chlororespiration by indigenous or "native" anaerobic bacteria. The substrate used at the Building 99 site was lactate, which is a chemical substance found in sour milk, molasses, and wine.

Demonstration Results

Before the field demonstration began, the biodegradation process was tested in the laboratory using bacteria native to Treasure Island as well as more aggressive, non-native bacteria. Laboratory results showed that biodegradation of PCE did occur in groundwater samples that contained only the native bacteria; however, the cultured, non-native bacteria showed a much higher ability to bioremediate the dissolved contaminants than the native bacteria alone.

For the field demonstration, three different tests were run in order to study the effects of varying conditions on the ability to biodegrade PCE. The first and second tests focused on "biostimulation" alone with the addition of a substrate to stimulate growth of the native bacteria. The first test used lactate alone as the fermentable substrate. The lactate was injected using a groundwater recirculation loop. The second test at the site combined lactate injection with hydrogen gas to further stimulate the chlororespiration process.

Finally, the third test combined an injection of lactate with another injection of non-native, cultured bacteria. This process is referred to as bioaugmentation and involves enhancing the natural biology of the aquifer with a culture of more aggressive, dechlorinating bacteria. However, adding cultured bacteria can add considerable cost to bioremediation efforts at a given site.

After four months, results from groundwater monitoring showed that the high concentrations of chlorinated ethenes were treated successfully via in situ anaerobic bioremediation. In all three test plots, the monitoring wells closest to the injection wells showed that the chlorinated ethenes had been completely degraded to non-toxic end products. The second and third tests (lactate plus hydrogen and lactate plus bacteria) showed higher PCE biodegradation rates than the first experiment with lactate alone. Also, the successful use of hydrogen with lactate indicated that significant cost avoidance may be achieved by avoiding the extra cost of injecting cultured bacteria.



Workers prepare to distribute a food-grade nutrient to bacteria

Future Work

Future work planned for the Building 99 site includes expanding the treatability study to include the lower-concentration plume of PCE that is positioned downgradient of the building, including additional injection and extraction wells, and monitoring the progress of bioremediation through March 2006. The expanded demonstration study will continue with the injection of lactate and hydrogen, as well as the injection of non-native, cultured bacteria as a further test of the role of bioaugmentation at this site.

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DOE Faces Challenges in Transferring Formerly Used Sites to Public

ITRC Surveys State Regulators on DOE's Long-Term Stewardship Issues

The U.S. Department of Energy (DOE) is the fourth largest Federal landowner, with 50 major sites on 2.4 million acres across the country. With its mission coming to a close at many sites and the potential to return land to the public, DOE and several states are considering how to best manage this transition. The concept of “long-term stewardship” (LTS) emerged over the past decade as it became clear that “cleanup” of Federal facilities under multiple regulatory programs cannot in all cases achieve conditions safe for unrestricted use and that some sites will therefore require some form of management far into the future. LTS is the Federally implemented institutions, controls, information, and mechanisms needed to protect the public and environment from legacy waste that is impractical, unsafe, or too costly to remediate to free-release standards.

In *Issues of Long-Term Stewardship: State Regulators' Perspectives* (RAD-3, July 2004), the Interstate Technology & Regulatory Council's (ITRC) Radionuclides Team reports the results of a targeted survey of state regulators involved with DOE sites and familiar with LTS issues. The survey was conducted to identify LTS challenges that could benefit from the development and application of additional science and technology of various types, including social, biological, chemical, and engineering. The document presents the survey methodology, data, results, and conclusions and—to put this effort into context with other LTS efforts—compares the survey findings with three other relevant documents: DOE's *Long-Term Stewardship Science and Technology Roadmap*; DOE's *Draft Guidance for Transition of Long-Term Surveillance and Maintenance Function*; and *Environmental Cleanup at Navy Facilities: Adaptive Site Management*, developed by the National Research Council.

Thirty-one regulators from seven states with large DOE facilities (Colorado, Missouri, New Mexico, Ohio, South Carolina, Tennessee, and Washington) completed the survey. A broad collection of activities was identified as important to closing sites and conducting LTS. State regulators recognize the need for new technologies to support better and more cost-effective cleanup and LTS efforts. They also identified several areas where they would like to improve their own skills and knowledge to be better prepared for the significant challenges LTS will present, including information management, monitoring, and decision making.

The challenges and technology gaps identified by the state regulators are based on a thorough understanding of the complexities that exist not only in their own states but also DOE complex wide. Ninety percent of respondents indicated that technology is critical in addressing treatment and monitoring challenges of LTS. The results of the survey were generally consistent with the comparison documents, which were selected because they represent Federal initiatives for moving the sites from cleanup to long-term management and meeting the implementation challenges of LTS and all of which recognize the need for a multidimensional approach to LTS.

Culminating with more than 20 broad-ranging observations identified from the survey and 10 specific conclusions for improvement of LTS implementation, this report provides a useful basis for continuing dialog, education, and development efforts to bring the perspectives closer, facilitate the transition of sites into LTS, improve the tools available for conducting LTS, and improve the effectiveness and efficiency of LTS operations. It highlights issues and concerns pertaining to LTS to assist regulators, stakeholders, technology developers and DOE to understand, evaluate, and make informed decisions as they move forward and implement long-term stewardship to protect human health and the environment.

Issues of Long-Term Stewardship: State Regulators' Perspectives and other ITRC products can be downloaded from the ITRC Web site at www.itrcweb.org by clicking on “Guidance Documents.” To receive a hard-copy ITRC document in the mail, e-mail your request to itrc@wpi.biz.

ITRC is a state-led group that works to overcome regulatory barriers to the deployment of innovative environmental technologies. ITRC participants come from state regulatory agencies, Federal agencies concerned with environmental cleanup, environmental consulting firms, and technology vendors. These diverse experts work together in technical teams to develop documents and training to help regulators develop consistent, streamlined approaches to regulating innovative technologies. ITRC products also help environmental consultants improve the way innovative technologies are deployed.

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Nanoscale Iron Injection Demonstrates Remediation of Chlorinated Solvents

NAS Jacksonville

Project Summary

The use of innovative technologies is one of numerous ways to improve on project quality and efficiency to minimize Department of Defense (DOD) environmental cleanup costs. Many of these innovative technologies are “unproven” and must be evaluated to determine their cost-effectiveness.

Tetra Tech NUS, Inc. (TtNUS) was selected to perform a demonstration and validation of in-situ remediation using nanoscale zero valent iron (ZVI) particles (i.e., nanoscale iron) to treat subsurface contamination. This demonstration was funded and administrated by the Naval Facilities Engineering Field Division South (EFD SOUTH) Navy's Pollution Abatement Ashore Technology Demonstration/Validation (YO817) Program and the Naval Facilities Engineering Service Center's (NFESC) Alternative Restoration Technology Team (ARTT). This demonstration is being performed at the Hangar 1000 site at NAS Jacksonville where trichloroethene (TCE) and trichloroethane (TCA) have been detected in groundwater at concentrations up to 80 mg/L.

Technology Background

The processes and destruction of these chlorinated aliphatic compounds using ZVI are well documented, as ZVI is commonly used in permeable reactive barriers (PRBs). Nanoscale ZVI particles, which are much smaller in size than those used in PRBs, have been shown in the laboratory to more effectively treat chlorinated volatile organic compounds (VOCs) in various media. Smaller in diameter than colloids or bacteria, these particles (10^{-9} meter) are approximately the same size as viruses or large molecules and thus have favorable transport properties. The particles may or may not have a noble metal catalyst coating. At Hangar 1000, palladium was used for this purpose and the particles are often referred to as bi-metallic particles (BNP). Please see Fall 2004 issue of RPM News for an additional description of nanoscale ZVI.

Hangar 1000 was selected because it presented a robust field demonstration site. The site was also a good fit, as the regulatory community embraced the technology and integrated it in the site's Focused Feasibility Study.



Figure 1: Nanoscale iron in solution.



Figure 2: Nanoscale iron recirculation well array.

Construction Challenges

ZVI has been effectively utilized in PRBs to prohibit migration of contaminated groundwater from moving beyond a given location (i.e., end of plume treatment). However, due to construction limitations, it is limited to this purpose unless advanced delivery techniques (e.g., fracturing) are utilized for source treatment. Nanoscale ZVI was easily injected via direct push technology and typical monitoring wells (under pressure and via a gravity injection, respectively), saving time and injection cost avoidance (Figures 1 and 2). Due to its advanced properties, the iron migrates to the subsurface contaminants and is treating both the contaminant source and plume. Further, the demonstration was favorably implemented despite an underground utility corridor and heterogeneous subsurface lithology.

Project Success

Based on samples collected 22 weeks after injection, the iron recirculation process fostered favorable mass transfer from the sorbed and potential immiscible phases into the dissolved phase. As expected, this increase was followed by rapid reductions up to 99 percent of concentrations of “parent” VOCs in many wells within 5 weeks. “Daughter” products of these parent VOCs were detected in all of the sampled wells. In some wells located in the center of the source, these daughter product concentrations increased and subsequently decreased, followed by a rise in innocuous by-products (e.g., ethene and ethane). Detections in all wells of innocuous compounds, such as ethane/ethane and acetylene/C4-hydrocarbons, were evidence of complete reductive dehalogenation and degradation via β -elimination. One well, H10MW3, had significant detections of these innocuous by-products providing strong evidence of complete VOC destruction and good degradation mass balance (Figures 3 and 4). Concentrations in a well (H10MW39) located approximately 20 feet downgradient of the recirculation array (i.e., source) were reduced to less than Florida Groundwater Cleanup Target Levels for all VOCs except for a marginal exceedance of TCE. This reduction coupled with the generation of innocuous by-products indicates that nanoscale iron was effective in reducing plume concentrations.

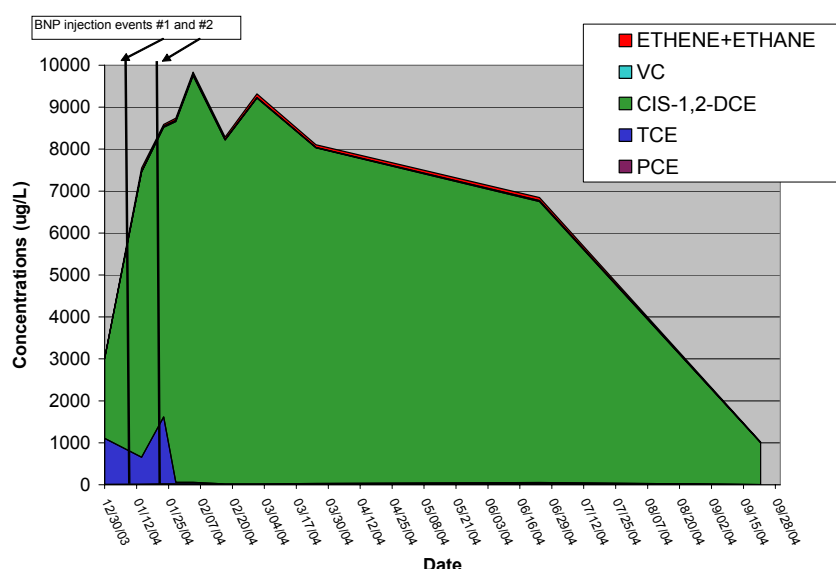


Figure 3: Chlorinated ethene groundwater concentrations in well H10MW3.

Data suggest that the iron's reactivity has begun to decrease moderately, but favorable conditions remain for degradation to continue. Additional work is planned to determine the long-term effects of this technology on the source and the plume. A total of 1 year of data will be collected; however, based on the first 6 months of data, it is likely that the demonstration goals will be achieved.

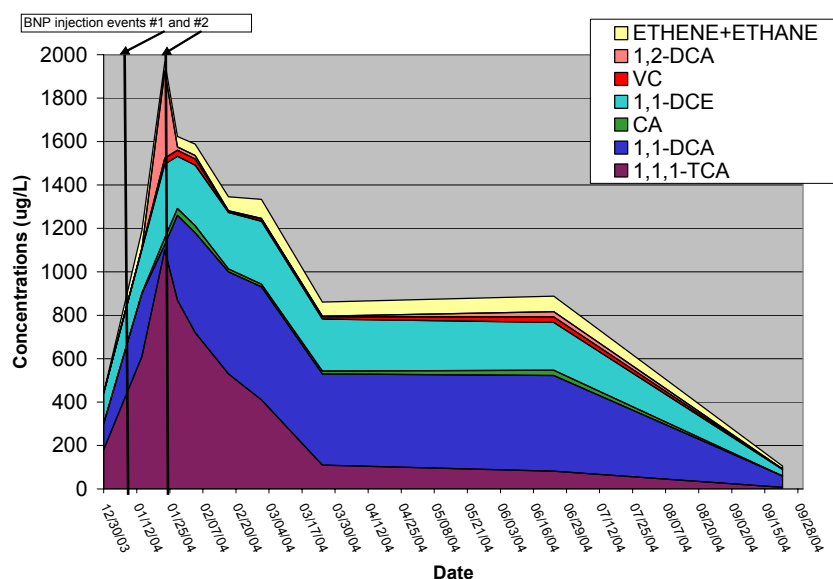


Figure 4: Chlorinated ethane groundwater concentrations in well H10MW3.

Cost

The total costs for the field demonstration was approximately \$259,000 for a source area having a total volume of 967 cubic yards of soil. Assuming that the 300 pounds of nanoscale iron injected treats 30 pounds of contamination in this volume of soil, these projected results indicate that the cost of nanoscale iron implementation compares favorably with other in situ source treatment technology alternatives. Furthermore, when comparing this technology implementation versus excavation and offsite disposal potentially may have avoided spending between \$125,000 and \$225,000 in additional costs for excavation.

Lessons Learned

- *The injection of nanoscale iron is applicable at sites requiring both source and plume treatment.*
- *Consistent with recommendations by EPA, sources suspected to have a large amount of sorbed mass or DNAPL present should undergo adequate characterization. The rigorous characterization conducted on this site allowed for the generation of reasonable remedial expectations.*
- *Selection of the most appropriate nanoscale iron particle for site-specific conditions is critical. Because the cost and physical and chemical properties of each iron particle available vary, the reduction and transport properties also vary. In many cases, these variables will significantly determine the success or failure of a nanoscale iron field application. For example, the polymer coating used on the nanoscale iron prohibits the bare iron tendency to aggregate (i.e., clump) together and allows the iron to transport through the subsurface.*
- *Despite the promising results presented, there is a great deal of opportunity to further develop this relatively immature technology beyond its current state and understand the resulting degradation processes better in the field.*

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The 2004 Navy & Marine Corps Restoration Advisory Board Training Workshop

"RABS: A Decade of Success"

The Department of the Navy (DON) hosted its 2004 Restoration Advisory Board (RAB) Training Workshop this past July in Salt Lake City, Utah. The workshop's theme, "RABS: A Decade of Success," recognized the tenth anniversary of RABs and 10 years of effective communication and resource sharing among them. The workshop provided community and installation co-chairs the opportunity to meet and share experiences about the operation of their RABs and provided training on issues that affect Navy and Marine Corps RABs.



Rear Admiral (select) Mark Boensel (N45) delivers keynote address at RAB Training Workshop.

Traveling from as far away as Puerto Rico, Hawaii, Alaska, and Guam, participants included 51 community co-chairs and 36 installation co-chairs representing 57 RABs, along with speakers and support staff.

Rear Admiral (select) Mark Boensel (N45) kicked off the Workshop with a keynote address. He reiterated his support for community outreach and participation, noting that he had just arrived at the Office of the Chief of Naval Operations (CNO) from Naval Air Station (NAS) Jacksonville where he had been the Commanding Officer. During the two days of meetings and training, all participants heard about the Navy Budget Overview, Installation Restoration Program (IRP) Overview, Base Realignment and Closure (BRAC) Cleanup and Transfer, Technical Assistance for Public Participation, and the Revised Proposed RAB Rule.

In addition, training sessions were offered on the Munitions Response Program, Remediation Technologies, Site Investigation Techniques and Risk Assessments, How Regulatory Standards are Set, Risk Communication, Site Closeout and Land Use Controls.

The community co-chair from Mare Island, led a session specifically for fellow community co-chairs. During this session community co-chairs developed

key issues, ideas, actions, and recommendations that they wanted to communicate to the Navy. Concurrently, installation co-chairs attended a session chaired by LANTDIV and SOUTHWESTDIV representatives that allowed the co-chairs to meet independently to discuss the challenges, concerns, and successes encountered at their RABs.

As part of the Training Workshop, RAB co-chairs also provided suggestions and recommendations on possible improvements to the Navy's environmental restoration program. Many co-chairs identified a need for more local awareness and stated that they felt hindered by a lack of engagement with their Public Affairs Officer. Another common request from community co-chairs was for a forum where they could communicate with each other to share ideas, charters, and best practices. It was also noted that RABs could be more effective with improved communication and conflict resolution training. Finally, community co-chairs encouraged the Navy to have an increased military, or uniformed, presence within their RABs to demonstrate an understanding of their importance to the Navy.

In response to the feedback received at the Training Workshop, the Navy is developing an online communication tool for RABs. The new online tool will allow RAB members to communicate with each other, share upcoming events, and obtain current information. Features of this communication tool will include a newsletter, a bulletin board, a RAB directory, relevant policies and guidance, links to other pertinent RAB websites, and training documents.



Restoration Advisory Board Training Workshop attendees at the Hilton Hotel in Salt Lake City, Utah.

The Navy also recognizes RABs' desire for improved communication at their meetings. RABs are encouraged to make use of the services provided by the Navy Environmental Health Center (Risk Communication, Navy Health, Operational and Environmental Issues Division), located on the Web at <http://www-nehc.med.navy.mil/HERC/index.htm>. This organization provides communication resources and guidance, including promoting open communication and reviewing presentation materials for RABs. The Navy is also working with a media specialist to develop fact sheets and best practices for reaching out to the media and getting out good news stories to the community.

Overall, feedback from the 2004 Navy & Marine Corps RAB Training Workshop was overwhelmingly positive. This success can be attributed to the many hard-working technical experts, field specialists, and RAB members who came together with the common goal of improving communication and resource sharing within the Navy's environmental restoration program.

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Measuring the Success of DNAPL Source Zone Treatments

The Interstate Technology & Regulatory Council's (ITRC's) dense, nonaqueous-phase liquids (DNAPLs) Team announces publication of *Strategies for Monitoring the Performance of DNAPL Source Zone Remedies*. The document is intended for state environmental regulators and others interested in learning about approaches to performance monitoring while implementing various in situ technologies for the treatment of DNAPLs.

The environmental problems associated with DNAPLs are well known—they can be extremely difficult to locate in the subsurface, small amounts of DNAPLs can contaminate large volumes of a groundwater, they are not amenable to conventional groundwater extraction and treatment technologies, and restoration of DNAPL sites to drinking water standards or maximum contaminant levels is considered unattainable. These problems are the foundation of many technical and regulatory barriers to DNAPL cleanup attempts.

Since 1999, ITRC's DNAPLs Team has been trying to ease some of these barriers by informing the regulatory community of developments in innovative approaches to DNAPL source zone characterization and remediation. The team has written four previous documents, providing an overview of the problem and guidance for site characterization, technology selection, and implementation.

Despite the ever-increasing number of field applications of DNAPL removal technologies, many unanswered questions remain regarding the effectiveness of these technologies and how best to measure their performance with respect to site-specific remedial objectives. Currently, there is no clear consensus based on objective guidelines as to the best way to evaluate treatment performance and balance performance objectives against site-specific stratigraphy, measurement uncertainties, regulatory acceptance, and cost. The best approach is for site owners, regulators, and stakeholders to understand the options available and the benefits and limitations of each so that informed decisions can be made. The primary purpose of this document, designated DNAPLs-5, is to provide that knowledge base. It presents a number of ways in which the success or failure in treating a DNAPL source zone has been measured and contains several succinct case studies that cover remedial goals and objectives, performance monitoring and verification, and lessons learned.

Strategies for Monitoring the Performance of DNAPL Source Zone Remedies and other ITRC products can be downloaded from the ITRC Web site at www.itrcweb.org by clicking on "Guidance Documents." To receive a hard-copy ITRC document in the mail, e-mail your request to itrc@wpi.biz.

ITRC is a state-led group that works to overcome regulatory barriers to the deployment of innovative environmental technologies. ITRC participants come from state regulatory agencies, Federal agencies concerned with environmental cleanup, environmental consulting firms, and technology vendors. These diverse experts work together in technical teams to develop documents and training to help regulators develop consistent, streamlined approaches to regulating innovative technologies. ITRC products also help environmental consultants improve the way innovative technologies are deployed.

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Hands-On Training for Innovative Groundwater Sampling Techniques

Naval Weapons Station Charleston

NAVFAC Southern Division (SOUTHDIV) has implemented several innovative monitoring and remediation techniques at the Naval Weapons Station (NWS) Charleston in South Carolina. Solid Waste Management Unit (SWMU) 12 at NWS Charleston has been the model site for implementation of several of these new techniques. SWMU 12 was used for the treatment of wooden ammunition boxes using pentachlorophenol (PCP) and other chlorinated solvents. As a result of historic waste management practices at the site, groundwater at SWMU 12 was impacted with high concentrations of chlorinated volatile organic compounds (CVOCs). NAVFAC remedial project managers (RPMs) and technical support staff have focused cleanup efforts at this site on passive, low-cost technologies such as a permeable reactive barrier, engineered and native phytoremediation, and monitored natural attenuation (MNA) to address the CVOCs in groundwater. Groundwater monitoring is a key component of these remedial actions and as many as 37 monitoring wells at SWMU 12 have been sampled in the past prior to the optimized sampling program.

Several innovative monitoring techniques have been used at SWMU 12 to both characterize the site and to track the performance of the remedial actions. Some of these innovations include the use of a tablet computer to collect real time field data. Over the last 3 years, 11 NAVFAC personnel have participated in a unique hands-on training opportunity at SWMU 12 conducted by Cliff Casey of NAVFAC's Southern Division. To gain some insight on this valuable training session, we talked to Matt Butler of Engineering Field Activity (EFA) Northwest, who participated in the field training this past summer in 2004. Below are some of Matt's comments on his training experience:

How long was the training session at the NWS Charleston site and how many wells did you sample? *"It was a four-day sampling event, each day starting about 0700 and finishing at about 1700 (with not much of a break in between). I was only able to participate three of those days. Each day we were able to sample about five or six wells."*

Who participated in the sampling activities with you? *"Cliff and I formed a sampling team, while two other people sampled the rest of the wells on their own, and there was one person to control the chain of custody, storage, and shipping for all the samples that were collected."*

What were some of the groundwater sampling techniques that you learned how to conduct? Can you briefly describe the basic steps involved to carry out the sampling? *"All the sampling that I assisted with was low flow using a peristaltic pump. One of the innovative sampling collection tools that we were using (which was the main reason for my being there) was an electronic tablet computer, which interfaced with a HydroLab device for real-time data collection and evaluation. Using this tool we were able to monitor the groundwater stabilization parameters to determine if the well had stabilized and then save those readings once it had. Each well had different sampling requirements, but in general while one of us collected the groundwater in bottles for the fixed based laboratory the other would be using field kits to test for unstable redox sensitive analytes."*

You collected groundwater samples for CVOCs, metals, and various biogeochemical parameters. Were there any challenges faced or special conditions needed to collect these samples? *"What I thought was most interesting was the difference in the interpretation of the field kits. For those that were colorimetric, sometimes Cliff and I would disagree on the values. Another interesting fact is the amount of time that it takes to fill a one-liter bottle when using a low flow technique. It's quick and easy to fill a 40-mL VOA vial for volatile organics analysis, but it can take longer (up to 10 minutes) to fill a one-liter sampling bottle for analytes such as sulfur hexafluoride, carbon 14, and/or nucleic acid based analyses. This impacts the schedule and how many wells you can sample in one day."*



Cliff Casey (I) Uses Tablet Computer for Groundwater Monitoring and Data Collection.

Did you find the field testing kits easy to use? *“The field testing kits were easy to use in terms of their mechanisms, but there were some techniques that Cliff taught me that really made a difference in the reading you would get. For example, it is important to draw up the sample very slowly when titrating for alkalinity or carbon dioxide. If you draw it up too fast, you will get too much volume into the titration ampule and less accurate results (even though the end color is the same).”*

How did you like using the tablet PC for the real time data collection? Was it easier than recording the data in a notebook? *“I thought the tablet PC was a great tool. I have reviewed many photocopies of field logbooks and some of them are very sloppy. I think the tablet PC would really facilitate sampling crews as well as provide uniformity in presentation of the data. It also minimizes errors in transcription of the field data from a log book to a computer database. One significant advantage includes the time savings in managing the data once the field crew gets back to the office. The data is easily transferred from one computer to a secure database. Another possible benefit to using a tablet PC could be its resistance to rain (but not immersion). There were a few times that our paperwork (well/analysis lists) was exposed to the rain and rendered it almost useless. The tablets did have a couple drawbacks. The first is a major concern for all computer applications, whether or not the data was really saved. As far as I know we never lost any data. The second drawback was the amount of cabling and cords that one could get tangled in.”*

How many sites do you currently manage with groundwater sampling activities? *“Did the training help to provide insights into how to manage or oversee these sampling efforts? I presently manage semi-annual sampling events at two operable units located at the Bremerton Naval Complex in Bremerton, Washington. I certainly gained a greater respect for those that have to collect the samples and manage the process. Many things need to be planned ahead of time in order for a sampling event to go smoothly. Often times our contractors need to sample in high-use areas and so they don't have the luxury of being able to choose which well they want to sample at a particular time.”*

Are you planning on implementing any of the innovative sampling techniques that you learned about at your sites? *“I would like to try the tablet PC. I think there are kinks that need to be worked out, but the technology is definitely there. I would like to see the application adapted to create a standardized MS Excel™ spreadsheet that stores the data and uses a unique naming convention for each sampling event. The current system requires in-depth, pre-existing knowledge of the site and sampling parameters to use effectively, but it could be adapted with a standardized spreadsheet.”*

Thanks for sharing your experience at this site, Matt. For more information on the sampling techniques used at NWS Charleston, please contact the Naval Facilities Engineering Service Center (NFESC) or SOUTHDIV.

Points of Contact

NFESC POC
1100 23rd Avenue
Port Hueneme, CA 93043

SOUTHDIV POC
2155 Eagle Drive
North Charleston, SC 29419

Technology Transfer (T2) News

Visit Our Web Site Address:
www.ert2.org



T2 Program Survey Results are In!

Through the T2 Program, NAVFAC is looking to identify and address challenges faced by Navy Remedial Project Managers (RPMs) in achieving successful and cost effective environmental restoration. The Annual T2 Program Survey helps to determine the overall interest in and satisfaction with the T2 Program among Navy RPMs.

The Annual T2 Program Survey was released both in hard copy form at the Spring 2004 Remediation Innovative Technology Seminar (RITS) and in an on-line version released in July 2004. There were a total of 195 respondents including 125 Navy responses, 28 contractor responses, and 32 responses from other groups such as regulators. The survey contained nine questions related to technology transfer efforts. We would like to take this opportunity to thank everyone that took the time to respond to the survey. Some of the highlights from the survey are listed below:

Survey participants responded that their current focus is on the Remedial Action Selection and the Long Term Management/Land Use Control phases of the Installation Restoration (IR) program. Survey results also indicated that the top two challenges to cleanup and closure at Navy sites are chlorinated solvents in groundwater (with 108 respondents) and metals in soil (with 51 respondents). In order to meet the needs of Navy RPMs, future T2 products will be focused on the top contaminants of concern as well as the phases of the IR program that pose the greatest challenges to site cleanup.

Navy RPMs reported that training seminars, conferences, and peer group discussions were their top choices for obtaining the latest information on cleanup technologies. A large number of Navy RPMs report viewing T2 products such as RITS (74%), NAVFAC Guidance Documents (62%), and RPM Newsletter Articles (54%) in the past year. The majority of Navy RPMs using the T2 Web Tools reported that the technical content is "effective" and the number of people reporting that they viewed a given Web tool ranged from 18 to 51 per tool. The Web Tools with the most "very effective" to "effective" ratings were In Situ Chemical Oxidation (ISCO) Tool, Dense Non-Aqueous Phase Liquid (DNAPL) Detection and Characterization Tool, and the Permeable Reactive Barrier (PRB) Tool. In order to maintain RPM satisfaction with future T2 products, NAVFAC will continue to produce tools that provide a significant level of technical information and that help to increase professional knowledge.

In an on-going effort to improve NAVFAC's T2 Program, plans are underway to incorporate these survey results into our FY05 program. New Web tools are now being developed to address the specific topics of interest brought to our attention by the respondents to the 2004 survey. A new Web tool is under development to thoroughly explain NAVFAC's site closeout process and give examples of successful closeouts and property transfers. There is also a new Web tool discussing MTBE in groundwater and the challenges it has presented to the cleanup program. In addition, a Web tool will be produced in FY05 to effectively explain the optimization guidance and process that has been adopted by NAVFAC. These tools as well as many others will be found on the Technology Transfer Web page and each tool's release will be announced in the monthly T2 updates. If you are not currently on the e-mail mailing list, please call our point of contact at (805) 982-1656 or e-mail at rits@nfesc.navy.mil.

Visit the www.ert2.org Web site to view the entire survey results.

New Instruction for Explosives Safety Oversight of the MRP

The Munitions Response Program (MRP) was created by the September 2001 revisions to the Management Guidance for the Defense Environmental Restoration Program (DERP). The MRP addresses response actions to munitions and explosives of concern (MEC) - which is defined as unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) present in high enough concentrations to pose an explosive hazard - as well as the chronic health risk associated with MC present in environmental media.



On 8 March 2004 the Naval Ordnance Safety and Security Activity (NOSSA), by direction from CNO (see OPNAV Instruction 8020.15/MCO 8020.13), released NOSSA Instruction 8020.15, "Military Munitions Response Program Oversight" which assigns responsibility and establishes procedures and requirements for oversight, review and verification of explosive safety aspects of the Navy's MRP. It applies to response actions involving military munitions on other than operational ranges.

The instruction establishes a new reporting requirement for munitions response site identification and describes the notification process. It also establishes the requirement for "explosive safety submissions (ESSs)" prior to the start of any munitions response activities. The ESS must be reviewed and approved by NOSSA and the Department of Defense Explosives Safety Board (DDESB) prior to any response actions. The instruction also requires that, once all response actions have taken place at an MR site, an "after action report (AAR)" must be completed and submitted to NOSSA and/or DDESB. NOSSA will maintain a repository of munitions emergency response and response action notifications, ESSs and associated AARs.

To view the NOSSA Instruction, follow the directions below:

- *Personnel with a .mil address can get a copy of the instruction by performing the following:*
- *Go to www.nossa.navsea.navy.mil*
- *Click the "coin" on the lower left of the screen*
- *Click **OK** at the bottom of the disclaimer screen*
- *Click **Ordnance Environmental** from the right side of the screen*
- *NOSSA 8020.15 is the second link*

Points of Contact

*Naval Facilities Engineering Service Center (NFESC)
1100 23rd Avenue
Port Hueneme, CA 93043*

*Naval Ordnance Safety and Security Activity (NOSSA)
Ordnance Environmental Support Office*

Civil Engineer Corps Officers School (CECOS) Winter 2004 Restoration Training Schedule



January 2005

11~13 January 2005	Munitions Response Site Management	Silverdale, WA
25~27 January 2005	Health and Environmental Risk Communication	San Diego, CA

February 2005

01~03 February 2005	Environmental Negotiation Workshop	San Diego, CA
15~17 February 2005	Achieving Data Quality~Quality Assurance Proj Planning	San Diego, CA

March 2005

01~04 March 2005	40 Hrs HAZWOPER	Washington, DC
13~15 March 2005	Navy Environmental Restoration Program	Norfolk, VA
22~24 March 2005	Health and Environmental Risk Communication	San Antonio, TX

For registration and course information, visit CECOS website: <https://www.cecots.navy.mil>.

Point of Contact

Civil Engineer Corps Officers School



Upcoming Cleanup Conference Announcement

The 2005 Cleanup Conference is scheduled for 1~3 March 2005 in Oxnard, California. Watch for more information in late December on the Environmental Restoration and BRAC website at:

<http://enviro.nfesc.navy.mil/scripts/WebObjects.dll/erbweb>

and

NAVFAC Work Groups

Conference rooms are available at NFESC for Work Group meetings 28 February 2005, Monday, before the Cleanup Conference.